

## LISTS PART 1: INTRODUCTION

Hello guys welcome to yet another programming screen cast, in this programming screen cast we will be teaching you a cool data structure that python provides you namely the lists don't get don't get terrified by the name data structures it is nothing but a way by which you can organise your data, you can arrange your data that is what you call as data structure basically. So list the name is even we use this particular thing list in our day to day life may be for when you have to for shopping you plan a list of items which you must definitely buy, off course we do buy items that we remember at that time when you go to a super market or based on the things that your neighbours in the super market buy off course there are changes in the list but i believe most of us have the habit of taking a smaller list of item that you must definitely buy that, that is they are at most necessities you have also that may be changes as i have said so the lists in the python also very much similar to that, so this is a flexible data structure naming that just now i have said you have a plan of your shopping item that you wants to purchase something but as need comes that may be changes in your purchases right? Something like that as and when there is a need you can add or delete items from the list. That's just a flexible data structure, let us see more of it. So to introduce it i will start off with a sort of a recap that you had in your previous week lectures, so sir had introduced the concept of variables and how you can club variables with print statements i hope you remember that ok, let me give further more hint so that you remember really well. So we had used the different variables for example we had that, me be open a console alright the console is opened now ok so i hope you remember the example that sir has given. We are three TAs in this course t1 is the TA whose name is so double quotes we will use for a string that is for names we use double quotes amit is the first TA simran is the second pa and i am the third TA vidhya ok sir has used the variable i to denote the instructor sudarshan so this is the example sir has used to demonstrate the variables. So let me give you another situation, what if you need to store the details of the students who are taking up the course? So course students the strength may vary so we cannot say like this like here it's fixed we know that for sure there three TAs so we have used these variables t1 t2 t3 so course students the strength may vary just as how i had given an example of shopping list you have a plan of buying some stuff but when you go to the super market you may buy something additional or you may feel that this particular thing is not really of much use to you or you may even some time you may plan something but you may get something better you may get a replacement there is definitely there are changes so something like that even here the strength of the students this is not something that is really well determined so what if it is determined? So for example let us consider a pg class room there may be some twenty students so in that case your solution would be s1 s2 s3 up to s20 maintain some twenty variable. Will be idea you will get as an extension of this concept as we already taught you but now a day's things are changing it's not just the class room teachings that happen every where or if you would see even our nptel course students strength keeps varying there more people may enrol in the beginning and as weeks go by some people drop out too or by all that what i mean is this is highly variable it's never a case that there are twenty students and there will be twenty students till the end that is

never a case there may be additions or deletions so something like that even though is very much similar to our shopping list this is highly variable thing so to handle it we need something which is really flexible so for that we will use something called as a list. So let me write it, it's called a list. I hope it is visible to you guys ok? So i have increased the font size list so that we call structure as list which is a flexible data structure where you can add and delete items really easily that is what you call as a list, So let me let us go ahead with our shopping example or the student example anything as you wish. I hope shopping example is more connected to us because most of us will have the habit of maintain a list of things that you need to definitely buy so let me take that as an example itself so let me say shopping that is the name of my list so these are the things i need to buy so i wanted to have a list so this is how you create a list please note this, please note this you are using this type of brackets square brackets we call them as we are using this kind of brackets in your keyboard this is near to your alphabet p this key, please see this, this brackets we use to denote list, his is how we are creating a list. So if i say shopping and just the brackets and empty list by name shopping is created. So that is the list is available but now items are presented in the list so that is what is happen happening if you just save this. If you want to insert item say for example i want to buy bread, coffee, sugar these are something i definitely want to buy so this is my shopping list as of now ok so if i say enter the list is created, if i just say a name equal to an you think the square brackets within that i enter the items separated by commas this is the syntax by which you create the list ok? so if i want to know what are in my shopping list i will say as usual this is how you had this for this variables print t1 say amit print t2 gave simran print t3 gave vidhya and so on just as how you had it print command can be used here as well print shopping if i say print shopping see i am getting the list here, bread, coffee, sugar but see i don't wanted with this quotes and that square brackets, commas i don't want it in the some tactical format, i want to write in a format that is friendly for us, how will we write down the shopping list one by one, one below the other right? so i want to print it in that fashion, how will i do that? Simple, will use what we had studied in the previous week our friend loops mainly for loop will be more friendly here, can also try using the other loops i leave it as an exercise you try using the other loops most of the task which can be done by for loop can be run by while loop as well something like that so you just try using while loop as well i will demonstrate using a for loop. So the method is, for the, let me just recap the for loop how we had used it for numbers. For i in range three what does this do? It will count zero one two, if i say this and a colon see the next line appears indented. I will say print i ok, let me say enter see i got zero one two so to deal with numbers you had used a functionality called range dealing with the items of a list is really very simple so let me demonstrate how that is done for item i or item anything for item in the name of the list you have to give here, what is the name of the list? Shopping. Shopping is the name of our list, i will give shopping for item in shopping print item ok. See bread coffee sugar it has displayed the item just one below the other just as how we would write it in a piece of paper, see observe it is very much similar to what you have learnt in your previous weeks in fact much easier than that as well for numbers you are using this functionality of range for list it is very simple just use the name of the list for item in shopping this is the intuit name i have given actually you can give any name here this and this you can give any name but this two has to be same you can give any name item is intuit even that it is a shopping bag shopping basket trolley sort of thing

given that so things inside it called as items so i had used the name item so this is how you print the items of the list in this fashion one by one alright, this process of checking through each item in the list and printing so let me print the list as such for your understanding once again if i say print shopping just as how i already set print t1 print t2 just we had said like that something like that if i say print shopping it prints in this manner with the square brackets and quotes something that is computer friendly format not a human friendly format to make into human friendly format we are using loops. See what this loop does here for item in shopping, it get into the list called shopping and checks over each of the item, each of the entity present here and it will print that entity the first iteration this is called item is assign the value bread so bread is printed here in the next step coffee is coffee is assign to the variable item so coffee is printed in the next step sugar is assign to the variable item so sugar is printed so this process is called the iteration this is nothing but your iterating over the list that is you are checking through each item that is present in the list, you are checking through each Element that is present in the list so this is how you iterate over the list that is you would check through each and every element in the list. Ok so i have printed all the element in the list what if i want to add another element? I want to add another element let say i would say curd, let me say curd so i should use a functionality there is a functionality available for this it is called as append it is an English word only append is nothing but adding to the end so append functionality would add it to the end of the list so if want to add another item say for example curd i would do it by shopping.Append of this is a bracket so inside the bracket give my item is curd, i want to buy curd as well so i have appended it to the shopping list so we shall try this print shopping we will see what is in the cart? Now see initially we had this as our shopping cart that is shopping list bread coffee sugar due to this command appending another item curd your shopping list has become like this bread, coffee, sugar as before and curd is added to the end of the shopping list ok, this is how i had added an item so is this the only way by which we can add an item it is only possible that you can keep adding at the end what if you want to change the priorities